

AMENDMENTS TO THE SPECIFICATION

Please amend paragraph [0007] as follows.

[0007] One specific embodiment of the invention is an optoelectronic device such as a VCSEL. The optoelectronic device includes: an active region typically composed of layers of (Al)GaAs; a p-type semiconductor region that is typically a layer of p-type (Al)GaAs; ~~an~~ upper and lower n-type semiconductor ~~region~~ regions that are typically layers of n-type (Al)GaAs; a tunnel junction between the p-type and upper n-type semiconductor regions; and a current blocking region between the active region and the n-type semiconductor region. The current blocking region operates as a ~~reversed~~ reverse biased PN junction and confines a current that flows between the active region and the semiconductor region so that the current flows through the tunnel junction.

Please amend paragraph [0020] as follows.

[0020] Active layer 120 is made of a material such as (Al)GaAs or InGaAs(N)/(Al)GaAs that provides induced light emissions in response to light and recombination of electrons and holes in current passing through active layer 120. Layer 120 is typically about 1,000 to 10,000 Å and can be formed by traditional semiconductor crystal growth techniques such as Metal Organic Chemical Vapor Deposition (MOCVD) or Molecular Beam Epitaxy (MBE) on bottom reflector 110. In this embodiment, layers 110, 120, 125, ~~130~~, 140 and 160 are semiconductor layers grown on substrate 180 in a single growth. In a typical embodiment of VCSEL 100, active layer 120 is undoped.

Please amend paragraph [0023] as follows.

[0023] A tunnel junction 130 is at the interface between layers 125 and 140. Tunnel junction 130 includes a thin heavily doped p++ layer (not shown) next to p-type layer 125 and a thin heavily doped n++ layer (not shown) next to n-type layer 140. In an exemplary embodiment of the invention, the thin p++ layer is about 200 Å or less thick and has a dopant concentration of about 1×10^{19} to 1×10^{20} cm⁻³. The thin n++ layer is similarly about 200 Å or less thick and has a dopant concentration of about 1×10^{19} to 5×10^{19} cm⁻³.

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